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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,582	12/22/2003	Van D. Merkle	534422-002	7978

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EXAMINER

BROWN JR, NATHAN H

ART UNIT	PAPER NUMBER
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2121

DATE MAILED: 12/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/743,582

Applicant(s)

MERKLE, VAN D.

Examiner

Nathan H. Brown, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE (3) MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on September 11, 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-14,16-27,29-31 and 34-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,14,27 and 32 is/are rejected.
- 7) ☒ Claim(s) 3-13,16-26,29,30,35 and 36 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Examiner's Detailed Office Action

1. This Office Action is responsive to the communication for application 10/743,582, filed September 11, 2006.
2. Claims 1, 3-14, 16-27, 29-32, and 34-36 are pending and it is noted that: claims 1, 14, 27, and 32 have been amended; claims 2, 15, 28, and 33 have been cancelled; claims 3-13, 16-26, 29-31, and 34-36 remain in their original form.
3. After the first office action, claims 1, 14, 27, and 32 stand rejected; claims 13, 14, and 26 are objected to for minor informalities; and claims 2-13, 15-26, 28-31, and 33-36 are objected to as being dependents of rejected base claims.

Claims 1, 14, 27, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Anderson et al.* (USPN 6,267,722 B1) in view of *Hatzilygeroudis et al.*, "XBONE: A Hybrid Expert System Supporting Diagnosis of Bone Diseases", and, further, in view of *Hatzilygeroudis et al.*(2), "An Intelligent Medical System for Diagnosis of Bone Diseases".

Regarding claims 1 and 14. *Anderson et al.* teach a method for generating a medical diagnosis (see Abstract) comprising the steps of:

creating a conversion table and storing said table in a computerized storage media of a computerized system, wherein said conversion table converts medical test data into numeric

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analyte values (*see* col. 23, lines 10-14 and col. 23, lines 50-55, *Examiner interprets the $n \times m$ array as a table of raw reflectance data for conversion. Examiner interprets the raw reflectance data as medical test data.*);

inputting at least one (two, for claim 14) test result of a patient in said computerized system (*see* col. 15, lines 8-18, *Examiner interprets a "reflectance measurement" to be one test result and "reading" as inputting the data in said computerized system.*);

converting said test result to at least two (one, for claim 14) numeric analyte values by said conversion table (*see* col. 3, lines 26-31, *Examiner interprets "a positive or negative result" and "a quantitative determination of the concentration of analyte in the sample" to be two numeric analyte values (the former in the set $\{0,1\}$ and the later in set of reals, \mathbf{R} .) generated by processing results from the reflectance conversion using the conversion table (see SUMMARY OF THE INVENTION).*);

Anderson et al. do not teach:

creating a sub-diagnosis database and storing said sub-diagnosis database in said storage media, said sub-diagnosis database including a plurality of rules, each rule of said plurality of rules being identified by at least one diagnosis parameter; and
searching said rules in said sub-diagnosis database for at least one target rule having at least one of said diagnosis parameters corresponding to at least one of said numeric analyte values; and
saving said target rules identified in said searching step.

However, *Hatzilygeroudis et al.* do teach:

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creating a sub-diagnosis database (see p. 2, §3. System Architecture, “*Patients DataBase (PDB)* contains the demographic data...”, *Examiner interprets demographic data to be sub-diagnostic data.*), said sub-diagnosis database including a plurality of rules (see p. 3, “Demographic patient data are transferred to WDB from PDB.”, *Examiner interprets the HKB/WDB (see Fig. 1) after the PDB transfer to comprise a sub-diagnosis database including a plurality of rules.*), each rule of said plurality of rules being identified by at least one diagnosis parameter (see p. 4, Fig. 3, *Examiner interprets the neurule, R2, to be identified by pain and fever which are diagnosis parameters whose values are learning from known patient cases and/or the diagnostic tree (see p. 4, §4.3 Training neurules).*);

searching said rules in said sub-diagnosis database for at least one target rule having at least one of said diagnosis parameters corresponding to at least one of said numeric analyte values (see p. 5, §4.4 The Hybrid Inference Process, *Examiner provides Official Notice that “backward chaining” is a form of searching rules. Examiner interprets the production,* “*<condition>::=<object><l-operator><value>[(<significance-factor>)]*” to correspond to numeric analyte values where object maps to an analyte and the l-operator maps to the analyte value.); and saving said target rules identified in said searching step (see p. 4, §4.3 Training neurules, “Training of the neurules takes place in a period prior to the initial use of the system and every time the system is updated.”, *Examiner interprets “the system is updated” to comprise saving the modified parts of the system (e.g., the newly trained neurules).*).

Hatzilygeroudis et al. do not teach storing said sub-diagnosis database in said storage media.

However, *Hatzilygeroudis et al.*(2) do teach storing said sub-diagnosis database in said storage

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media (see §5. Conclusions, "It is currently implemented in the C language on a PC.", *Examiner interprets "implemented ... on a PC" to mean the XBONE executable and said sub-diagnosis database are stored on the PC's hard disk drive when the PC is powered off.*).

It would have been obvious at the time the invention was made to persons having ordinary skill in the art to combine *Anderson et al.* with *Hatzilygeroudis et al.* and *Hatzilygeroudis et al.* (2) to provide rule training from known patient cases and/or the diagnostic tree.

Regarding claims 27 and 32. *Anderson et al.* teach a system for medical diagnosis (see Abstract) comprising:

a computerized system having a computerized storage media and a computerized processor (see col. 2, lines 22-38, *Examiner interprets "remote computer" to have a computerized storage media and a computerized processor.*);

an input device workably interconnected with said computerized system to allow a user to input test results to said computerized system (see col. 2, lines 21-26, *Examiner interprets "test data" to be test results.*);

a conversion table stored in said storage media (see col. 23, lines 10-14 and col. 23, lines 50-55, *Examiner interprets the $n \times m$ array as a table of raw reflectance data for conversion. Examiner interprets the raw reflectance data as medical test data.*) for converting at least one (two, for claim 32) test result input by said user into at least two (one, for claim 32) numeric analyte values (see col. 3, lines 26-31, *Examiner interprets "a positive or negative result" and "a*

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quantitative determination of the concentration of analyte in the sample" to be two numeric analyte values (the former in the set $\{0,1\}$ and the later in set of reals, \mathbf{R} .) generated by processing results from the reflectance conversion using the conversion table (see SUMMARY OF THE INVENTION).);

Anderson et al. do not teach a sub-diagnosis database stored in said storage media, said sub-diagnosis database including a plurality of rules, each rule of said plurality of rules being identified by at least one diagnosis parameter, wherein said system searches said rules in said sub-diagnosis database and saves at least one target rule having at least one of said diagnosis parameters corresponding to at least one of said analyte values.

However, *Hatzilygeroudis et al.* do teach a sub-diagnosis database (see p. 2, §3. System Architecture, "Patients DataBase (PDB) contains the demographic data...", *Examiner interprets demographic data to be sub-diagnostic data*, said sub-diagnosis database including a plurality of rules (see p. 3, "Demographic patient data are transferred to WDB from PDB.", *Examiner interprets the HKB/WDB (see Fig. 1) after the PDB transfer to comprise a sub-diagnosis database including a plurality of rules.*), each rule of said plurality of rules being identified by at least one diagnosis parameter (see p. 4, Fig. 3, *Examiner interprets the neurule, R2, to be identified by pain and fever which are diagnosis parameters whose values are learning from known patient cases and/or the diagnostic tree (see p. 4, §4.3 Training neurules).*), wherein said system searches said rules in said sub-diagnosis database and saves at least one target rule having at least one of said diagnosis parameters corresponding to at least one of said analyte values (see

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p. 5, §4.4 The Hybrid Inference Process, *Examiner provides Official Notice that “backward chaining” is a form of searching rules. Examiner interprets the production, “<condition>::=<object><l-operator><value>[(<significance-factor>)]” to correspond to numeric analyte values where object maps to an analyte and the l-operator maps to the analyte value.)*

Hatzilygeroudis et al. do not teach said sub-diagnosis database stored in said storage media.

However, *Hatzilygeroudis et al.*(2) do teach said sub-diagnosis database stored in said storage media (see §5. Conclusions, “It is currently implemented in the C language on a PC.”, *Examiner interprets “implemented ... on a PC” to mean the XBONE executable and said sub-diagnosis database are stored on the PC’s hard disk drive when the PC is powered off.*).

It would have been obvious at the time the invention was made to persons having ordinary skill in the art to combine *Anderson et al.* with *Hatzilygeroudis et al.* and *Hatzilygeroudis et al.*(2) to provide rule training from known patient cases and/or the diagnostic tree.

Response to Arguments

Applicant's arguments filed September 11, 2006 have been fully considered but they are not persuasive. Applicants argue that:

The Examiner has indicated that claims 2-13, 15-26, 28-31 and 33-36 would be allowable if written in independent form. Accordingly, in an effort to expedite the mailing of a Notice of Allowance, claims 1, 14, 27 and 32 have been amended to incorporate the limitations of allowable claims 2, 15, 28 and 33, respectively. It is submitted that the application is in condition for allowance...

Examiner responds that Applicant has added:

wherein said system generates a report listing at least one said target rule saved by said system.

to amend claims 1, 14, 27 and 32 with the limitations of allowable claims 2, 15, 28 and 33.

Examiner notes that the Specification states that:

The target rules remaining after the search process 400 form the diagnosis. A final diagnosis may have several rules 124 based on several analytes and their correlations. The rules 124 that have been suppressed are not included in the final diagnosis. Once the list of rules 124 has been generated, it can be printed out in report form using output device 140 or stored in electronic format.

Therefore, Applicant has amended claims 1, 14, 27, and 32 to claim the output of a diagnostic report. Examiner notes that output of a diagnostic report is anticipated by Anderson (*see* col. 9, lines 64-65, "The output from the system is a disease risk index or medical diagnosis.").

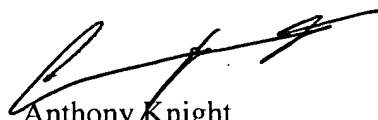
Therefore the rejection of claims 1, 14, 27, and 32 under 35 U.S.C. 103(a) is maintained.

Examiner regrets any suggestion that claims 2, 15, 28 and 33, *alone*, could place the application in condition for allowance.

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Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan H. Brown, Jr. whose telephone number is 571-272- 8632. The examiner can normally be reached on M-F 0830-1700. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight can be reached on 571-272-3687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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Nathan H. Brown, Jr.
December 1, 2006